Underage Drinking Capstone project – Boise State University Students (2010)

Jon Lang, a student at Boise State University, attended the May meeting of Treasure Valley Alcohol Drug Coalition meeting. At the meeting, his team's college paper with results of a research project on underage drinking.

What follows is the paper, posted here at the region 4 web page with permission of Jon Lang.

A Study of the Causes and Effects of Underage Drinking and Effective Preventive Approaches

Nicole Ficquette, Meredith Grace, Ryan Jordan, Jon Lang, and Gail Villarreal

Boise State University

Abstract

Underage drinking is a serious public health problem that creates enormous social costs for the country and exacts both short- and long-term consequences on the lives of many youth. Previous research has defined both the scope of the problem and the efforts that have been made to reduce the occurrence of underage drinking. Our team surveyed 231 general psychology students to examine their attitudes toward drinking, their drinking patterns as adolescents and now, and their perceptions on the kinds of prevention programs in which they participated. The results generally support previous research and support an interesting paradox—that youth generally feel that their peers drink much more than they actually do which tends to increase their own drinking behavior. Most survey participants felt that the prevention programs in which they participated were valuable and support more comprehensive programs, which is a key recommendation of this report.

Keywords: underage drinking, prevention programs

A Study of the Causes and Effects of Underage Drinking and Effective Preventive Approaches

Although the trend in underage alcohol use identified in the 2008 Monitoring the Future (MTF) survey, like those of many illicit drugs, has declined since the mid-1990s and generally since the 1970s, it is still a significant public health problem in the United States and the world at large. Alcohol has long been and continues to be the drug most commonly used by young people under age 21, more than tobacco or other illicit drugs (Grube, 2010). The 2006 MTF survey found twice as many youth reported using alcohol than tobacco, and five times more reported using alcohol than all other illicit substances. The 2008 MTF survey shows that 55.1% of adolescents in grades 8, 10, and 12 report having used alcohol in their lifetime and 35.1% report having been drunk in their lifetime. Of this population, 48.7% reported having used alcohol in the last year with 28.1% having been drunk in the past year; 28.1% used alcohol in past 30-days with 14.9% having been drunk in the past 30-days; and 1.4% indicated they drank the previous day with 0.6% stating they had been drunk the previous day. Of the total, 15.5% reported having drunk five or more drinks in one drinking episode during the past two weeks. In the 2007 Youth Risk Behavior Survey, high school seniors indicated that during the past 30 days: (a) 45% drank some amount of alcohol, (b) 26% had drank more than five drinks in one sitting, (c) 11% had driven a vehicle after drinking, and (d) 29% had ridden in a vehicle with a driver who had been drinking.

Every year, according to the Center for Disease Control (CDC), the death toll among young people under age 21 numbers approximately 5,000, of which about 1,900 result from motor vehicle crashes, 1,600 result from homicides, 300 from suicides, and hundreds more from injuries caused by falls, burns, and drowning. In 2005 there were more than 145,000 emergency

room visits by youth 12 to 20 years for injuries and other conditions related to the use of alcohol (SAMHSA, 2005).

In 2001, approximately 13.2 million underage drinkers consumed alcohol on a monthly basis. This population accounted for 16.2% of alcohol sales that year at an estimated retail cost of $18.1 billion and generated about $2.0 billion in tax revenues. However, the social cost of their drinking amounted to $61.9 billion, including $5.4 billion in medical costs, $14.9 billion in lost work (based on both their present and future inability to work due to injury or death) and other resource costs, and $41.6 billion in lost quality of life. The total cost to society of underage drinking in 2001 amounted to about $3.00 per illegal drink of which $1.00 went toward medical costs, property damage, work losses and other resources. This compared to the average purchase price of $0.90 and the associated tax revenue of $0.10 per drink (Miller et al., 2006).

The Pacific Institute for Research and Evaluation (PIRE) concluded that underage drinking cost the citizens of Idaho $250 million in 2007 based on the same types of social costs identified above. The direct costs of just medical care and loss of work totals about $86 million per year in Idaho. This amounts to $1650 per year for every person under the age of 21 in Idaho, placing Idaho 46th highest among the 50 states for the cost per youth of underage drinking.

Alcohol-attributed violence and traffic accidents were the major contributors to this cost. According to the Center for Disease Control, motor vehicle crashes are the leading cause of death for teenagers. Approximately 20% of traffic crashes with a driver under age 21 involved alcohol (Miller et al., 1998). In 2003, the Bureau of Justice Statistics reported that 29.7% of murders, 30.8% of rapes, 45.7% of robberies, 27.4% of all other assaults, 16% of child abuse cases, 49.7 of burglaries, 45.1% of larcenies, and 51.8% of motor vehicle thefts were committed by perpetrators under the age of 21. Convicted youth in custody reported being under the

influence of only alcohol in 41.3% of homicides, 43.4% of sexual assaults, and 24.4% of robberies and other property crimes. These figures do not include crimes in which both alcohol and another illicit substance were involved (Miller, et al., 2006). In 2000, there were 2,401 suicide victims under the age of 21, and 72% of suicidal acts were alcohol-involved (Center for Disease Control, 2005). In addition, about 20% of high-risk sexual acts (failure to use a condom or other birth control method) by youth involve alcohol; which contributes to the risk of teenage pregnancy, STDs and the emotional consequences of unplanned or unwanted sexual behavior (Miller, et al., 2006).

Underage drinking, and particularly early onset drinking (prior to age 15) has been associated with an increased likelihood of a broad range of negative physiological, neurological and psychological problems later in life. Adolescents who begin drinking before age 15 are five times more likely to develop alcohol dependence or abuse problems later in life than those who begin drinking after age 21, with its associated risks for heart and liver damage (Hingson, Heeren, & Winter, 2006). Squeglia et al., (2009) found that beginning moderate to heavy alcohol use in adolescence predicted changes in neuropsychological functioning for both boys and girls, even at low to moderate rates of consumption. Girls tended to experience impaired visuospatial functioning which could affect their ability to recall previously encoded spatial information and lead to problems in such activities as driving and figural reasoning. For boys the negative consequences appeared to be linked to drinking that resulted in hangover symptoms, and involved decrements in sustained attention which could affect academic achievement and behavioral functioning.

Other research has focused on how alcohol affects the developing teenage brain. The brain experiences a great deal of plasticity during the period of adolescence and young adulthood

(from age 10 through 25) involving the development of new synaptic connections, myelination of axons, and dendritic branching (Pinel, 2009). It has been found that alcohol consumption during this period can impair this process in two critical brain areas: the prefrontal cortex and the hippocampus. The prefrontal area has been found to undergo the most change during this period and alcohol has been found to cause long-term and irreversible damage which can affect a person's cognitive (thinking, planning, decision-making) abilities. The hippocampus is involved in learning and memory and has been found to suffer the worst damage in teens. The hippocampi of adolescents with long-term drinking histories have been found to be up to 10% smaller than normal (Squeglia, et al., 2009).

Based on these kinds of data, it is obvious that the federal government, individual states and local communities are very interested in finding ways to prevent or reduce underage drinking and it consequences. A great deal of research has been conducted in that effort. In 2005, the Boise State University Center for Health Policy conducted a telephone survey of adults throughout the state to gauge their knowledge and perceptions of the problem and what actions they would support in curbing it. The majority of both urban and rural residents agreed that underage drinking is a significant problem and that it was common in their communities. They were particularly concerned about youth drinking and driving. A strong majority agreed that teenagers should never be allowed to drink in any circumstances other than participation in religious ceremonies. As would be expected, parents more strongly disapproved of underage drinking than non-parents and also reported drinking less than non-parents. Overall, the respondents reported a relatively low level of personal alcohol use. Nearly a third of respondents reported that they or a loved one had been seriously injured in an accident involving a drunk driver and more than two-thirds reported that they or a loved one had a drinking problem.

In terms of prevention methods, a majority of respondents favored a one-year driver's license suspension and community service for teenagers caught drinking. They also supported restrictions on advertising alcoholic beverages, stronger enforcement actions against commercial outlets selling alcohol to minors, and against adults who provide alcohol to minors. There was a strong negative response for lowering the drinking age from 21 years to 18 years.

Before we can identify effective methods to prevent or reduce underage drinking, it is critical that we identify the factors that contribute to it. Underage drinking, as with most behaviors, is influenced by complex interactions of biological, cognitive, affective, psychological and social factors that come into play during childhood and adolescent development. A child's beliefs about alcohol use as a positive or negative behavior are established very early in life and are directly influenced by the actions and messages they get from their parents, siblings and extended family. Children who develop a positive attitude about alcohol use and an expectation that drinking alcohol will provide a pleasurable experience are much more likely to drink than those with negative attitudes and expectations (Zucker, Kincaid, Fitzgerald, & Bingham, 1995). In addition, being the child of an alcoholic or having alcoholism in the family can be indicative of a genetic predisposition to alcoholism (Grant & Dawson, 1998).

The maturing adolescent brain seems to react differently to the effects of alcohol than the adult brain. Young drinkers tend to be able to consume greater quantities of alcohol than adults before experiencing negative effects such as drowsiness, lack of coordination, and withdrawal/hangover effects. They also tend to have greater sensitivity to the positive effects of alcohol such as a reduction in social inhibition and the euphoria associated with increased activity of the pleasure centers of the brain (Spear, 2000; Spear & Varlinskaya, 2005).

It has also been found that individual personality factors can be very predictive of adolescents' drinking behaviors, particularly early onset drinking and binge drinking which tend to have the most negative short- and long-term consequences. Two constellations of personality profiles have been found to be most problematic: (a) those who are especially high in sensation seeking and impulsivity, and tend to be hyperactive, disruptive and aggressive from an early age (often associated with a variety of conduct problems); and (b) those who are prone to anxiety and depression, have low self-esteem and poor social skills who tend to use alcohol as a coping mechanism (Conrod, Castellanos, & Mackie, 2007).

Another factor that is particularly relevant in adolescence is the often erroneous perceptions young people have about the prevalence and degree of alcohol consumption by their peers. This age group is particularly driven to conform to the social expectations and behaviors of their friends and associates, who often exaggerate how much and how often they drink. The media, and governmental and social service agencies highly publicize information related to underage drinking which can lead young people to think that is more prevalent and accepted by their peers than it is (Graham, Marks, & Hansen, 1991).

Finally, the ready availability of alcohol to minors is a contributing factor. 93% of high school seniors report that alcohol is easy or very easy to obtain. A study was conducted in 45 Oregon communities in which underage operatives were able to purchase alcohol at 34% of the commercial outlets approached. Purchase rates were highest at convenience (38%) and grocery (36%) stores and relatively low at other types of outlets. Social sources appear to be an even more prevalent means for obtaining alcohol, the most common being friends (both over and under age 21), at parties, and from their parent's homes (Grube, 2010).

Two basic approaches have been used to prevent or reduce underage drinking. One involves targeting the individual factors that contribute to drinking behaviors, e.g., educational efforts such as Red Ribbon Week to increase the knowledge individuals have about the effects of alcohol and its consequences; efforts to change the attitudes, beliefs, expectations, intentions and motivations individuals have about alcohol use; and teaching kids skills that will help them resist the influences and opportunities that they will undoubtedly have to face.

The second is an environmental approach which attempts to prevent or reduce underage drinking by changing the context in which drinking occurs. This is done through the adoption of policies, laws and programs aimed at reducing the opportunities and community tolerance for alcohol consumption by minors. A number of environmental approaches have been used over the years to reduce underage drinking. Perhaps the most effective has been raising the minimum legal drinking age (MLDA) to 21 years of age, which was driven by the National Minimum Drinking Age Act of 1984 that required all states to raise their drinking age to 21 or lose federal highway funds. This act alone has been associated with a 5.5% lower prevalence rate of 30-day alcohol use and a 2.8% lower prevalence of heavy drinking among high school seniors and recent high school graduates (O'Malley & Wagenaar, 1991).

The adoption of zero tolerance laws that apply a lower legal blood alcohol content (BAC) level to drivers under age 21 for conviction of Driving Under the Influence (DUI) have also had a significant impact on underage drinking and driving. In one study, zero tolerance laws were associated with a 19% reduction in self-reported driving after any drinking and a 24% reduction in reported driving after five or more drinks (Wagenaar, O'Malley, & LaFond, 2001). Another study found a 15% reduction in fatal crashes involving drivers under 21 who had BACs of 0.08% or higher and a 18% reduction in those with BACs of 0.01% or higher (Dang, 2008). In Idaho,

anyone under the age of 21 who has a BAC of 0.02 to 0.07 can be charged with Underage Driving Under the Influence which has a maximum penalty of a $1000 fine and one year driver's license suspension.

Graduated driver licensing laws, which place limitations and restrictions on when, where and with whom young drivers are allowed to drive, have also been effective in reducing underage drinking and alcohol-related motor vehicle accidents (Grube, 2010). However some studies have shown mixed results. As with many programs, the quality of the components of the program and the effectiveness of its implementation determine its results. Graduated licensing programs based on the criteria of the Insurance Institute for Highway Safety have been shown to reduce driver fatalities among 15- to 17-year-olds by 19.4% compared to 5.4% for programs deemed "fair" and less than 1% for programs deemed "marginal" (Morrisey, Grabowski, Dee, & Campbell, 2006).

Raising the price of alcohol through increased taxation has also been shown to reduce the consumption of alcohol by youth by 3% to 6% (Pacula, 1998). Unfortunately in Idaho, as in many other states, there has been a lack of legislative support for measures to increase these taxes (Clements, 2010). Laixuthai and Chaloupka (1993) estimated that increasing alcohol taxes to match the rate of inflation would result in a 19% reduction in heavy drinking by youth and a 6% reduction in high-risk drinking.

The regulation of commercial alcohol outlets and the implementation of policies requiring clerks and servers to check the identification of all customers who appear to be underage, along with training employees to recognize altered or false identification have also been found to be effective in some circumstances. Mandatory programs that are strictly enforced have been found to be most effective. In 2007, the State of Washington Liquor Control Board

conducted a study that found that the ratio of alcohol enforcement officers to licensed establishments should be 1 officer to 116 licensees for maximum effectiveness. Idaho currently has one officer for more than 2000 licensed establishments statewide (Clements, 2010).

School policies and school-based prevention programs can also have an impact on underage drinking. A study of school policies directed at the use of tobacco, drugs, and alcohol in the United States and Australia found that well-implemented and consistently enforced policies are related to reductions in alcohol and other drug use (Evans-Whipp, Bond, Toumbourou, & Catalano, 2007). Although the earliest school-based prevention programs, which were based on education and scare tactics, were not found to be effective; some current programs are showing promise. The programs that are having the best results are based on social influence models and social norm theory. They help young people confront the social pressures to engage in underage drinking by teaching resistance skills (National Institute on Alcohol Abuse and Alcoholism, 2004).

Family-based prevention programs are also essential to any comprehensive strategy to reduce underage drinking. It has been shown that parents have a strong influence on whether their children choose to drink or not, and this has been consistent in all racial/ethnic groups (Barnes, Reifman, Farrell, & Dintcheff, 2000). Parents who role model anti-drinking behaviors and attitudes, set clear rules against drinking, stay involved with their children, and actively monitor their activities can have a positive impact on their children's' decisions not to drink (Fang, Schinke, & Cole, 2009). Programs such as the Iowa Strengthening Families Program, which is delivered when children are in the 6th grade, have demonstrated positive long-term impacts on children's future drinking behavior (Spoth, Redmond, & Shin, 2001).

Idaho has adopted many of the environmental approaches to reducing underage drinking, to include: (a) a MLDA of 21 years, (b) graduated driver licensing programs, (c) zero tolerance policies for underage driving under the influence, and (d) relatively strict enforcement of DUI laws. As noted above, the state is seriously deficient in the number of enforcement officers for licensed alcohol distributors.

Previous research has studied the attitudes and knowledge of adults statewide regarding underage drinking and their support for prevention efforts (McDonald, Pritchard, & Reischl, 2005). However, little research has been done locally on the perceptions of young people themselves on why they drink, the effects drinking has had on them personally as well as the community at large, and what has impacted their decision to drink or not drink in terms of personal and family factors, and community and school-based programs. The purpose of this study is to examine the attitudes, beliefs and knowledge young people have about underage drinking; and to identify what they feel are the most effective approaches in preventing/reducing the negative consequences of this behavior. The method of study will be the distribution of a survey to general psychology students at Boise State University exploring these topics. The goal of the study is to identify the most effective measures that the State, our local communities, and our schools can take to combat this major public health problem.

Method

Participants

The participants in this study were recruited from a pool of General Psychology students at Boise State University using a program called Experimetrix. A total of 231 students participated in the survey. There were 110 males (47.6%) and 121 females (52.4%) ranging in age from 18 to 55 years ($M = 22.40$, $SD = 6.04$).

Materials

The materials used in this study consisted of original survey questions. These questions were pilot tested by the project team.

Procedure

The survey participants self-selected to complete the survey online using Qualtrics and were given 30 minutes to complete the questionnaire. After completion, students were debriefed online, thanked for their participation, and given course credit.

Results

As stated above, the purpose of this study is to examine the attitudes, beliefs and knowledge young people have about underage drinking; and to identify what they feel are the most effective approaches in preventing/reducing the negative consequences of this behavior. We also wanted to examine parental attitudes toward drinking as well as to what degree they either allowed or discouraged their children from drinking. The number of parents allowing their children to drink was very low. On a scale of 1 = *never* to 5 = *always,* the mean was 1.90.

When examining risk factors that may contribute to underage drinking, we found that 91 of the 223 participants who responded fell into one of the designated high risk pools, which included: (a) single parent family (51 participants); (b) low income family (27 participants); (c) foster care (1 participant); adopted (6 participants); and (d) being raised by a relative other than your biological parents (6 participants).

Of the 198 participants who indicated that they had participated in some kind of prevention program in school, a majority indicated that they found the programs to informative and important. On a scale of 1 = *not at all informative* to 5 = *very informative,* the mean was *M* = 3.47. On a scale of 1 = *not at all important* to 5 = *very important,* the mean was *M* = 3.98.

In looking at the drinking habits of the participants, we found the majority drank very little in high school and continue to drink moderately. On a scale in 1 = *never* and 5 = *always,* the mean of those who drank in high school on school days was *M* = 1.57, with 162 of the participants responding *never.* Current drinking habits were not much higher with an *M* = 2.50, with most responses lying between once a month and less than once a month. When asked how often participants drove while under the influence of alcohol, on scale of 1 = *never* and 5 = *often,* the mean was *M* = 1.71 with 143 responding *never.*

However, when asked how prevalent underage drinking was in the community in which they grew up, on a scale of 1 = *very uncommon* to 5 = *very common,* the mean was *M* = 4.26 with 110 responses of *very common.* This same discrepancy exists in the perception of underage driving under the influence in their community, in which on the same scale the mean was *M* = 3.40.

Another significant finding of our survey was that 36% reported that either they or someone in their immediate family had a problem with alcohol.

Discussion

The purpose of this study was to find out the perceptions college students have of underage alcohol consumption so that community agencies can have a better understanding of these perceptions and use that information to improve alcohol prevention programs for our

youth. This study focused on a survey in which self report of personal underage drinking patterns, risk factors, perception of the prevalence of underage drinking in the community, and the student's opinion of the relevance of prevention programs they had taken part in during high school and middle school. Our hypothesis that self-reports of personal drinking habits while underage would be low was confirmed by our data as was self-reports of current personal drinking habits. The data also showed that self-reports of the participant driving while under the influence of alcohol were also very low.

Data from the survey also supported our hypothesis that there is a relationship between underage drinking patterns and certain life risk factors. Most of the participants in our survey that reported higher levels of underage alcohol consumption also reported being in an "at risk" group. As defined by our survey, an "at risk" group is considered to be a person living with a single parent, being raised in a low income household, being raised in an environment where alcohol consumption is common, and being raised by someone other than the biological parents.

The most interesting data that was analyzed from our survey was the participant's perception of the prevalence of underage drinking in their community. The participants in our survey reported a very high belief that underage drinking is prevalent in their community. Study participants also reported a strong belief that driving while under the influence of alcohol is common for minors in their community.

Nearly all of the survey participants, eighty-nine percent, reported that they had participated in some type of alcohol prevention program while in high school and/or middle school. Of those participants, most reported that the information they learned about alcohol was both important and informative for them. Most of the participants reported receiving alcohol

prevention information in programs such as Red Ribbon Week, D.A.R.E., and alcohol prevention is a portion of Health Studies which is a required course in high school.

One of the limitations in this study was the number of participants, which totaled 223. A larger number of participants would make the study more reliable. Another limitation was that this study was limited to college students. Because most people that misuse alcohol also have problems with keeping commitments and responsibilities, a large number of people with alcohol problems probably do not attend college. Better information on perceptions of underage drinking and alcohol prevention programs could be obtained by surveying a more diverse population of young adults.

Another limitation of this study is the issue of self-reporting. Self-reporting on alcohol use patterns may be understated either intentionally or unintentionally as many people do not consciously keep track of how often they drink alcohol or how much alcohol they drink per day. Because of a perceived stigma, many participants may either under-report or over-report their consumption of alcohol. It is also difficult for a survey participant to accurately report their parent's alcohol use. It is often easier for participants to judge the alcohol use of parents who rarely drink than it is to estimate the amount or frequency of alcohol consumed by a parent who drinks regularly. It may be best to also survey the parents to get more accurate results on their alcohol use.

From our research data it seems that two areas need to be addressed to help with underage drinking prevention. The first area is perception. The data we collected showed a large discrepancy between self-reported alcohol use and the perception of the prevalence of alcohol use in the community. Adolescents that believe that underage drinking is the norm will probably be more apt to consume alcohol as a way to fit in with their peers. It is important to

change the perception of underage drinking being the norm to underage drinking being a stigma. If this perception could be changed, then the risk of minors consuming alcohol would decrease.

The data also shows that adolescents in the "at risk" category need more alcohol prevention education. Risk seeking and early aggressive behaviors are prevalent in at risk children beginning at an early age. Early aggressive behaviors can be identified in children as young as five years old. Risk seeking behavior is identified in adolescents. Identifying these behaviors and beginning prevention measures, perhaps in a group setting, could help to prevent the problem of underage drinking before it begins. Using the limited resources available for alcohol prevention may be better spent addressing the at risk population than addressing all adolescents.

Further research needs to be done in the communities to understand their perceptions of underage drinking. Because the study participants attend Boise State University, it is unclear whether they identified Boise as the community they were identifying with or the community where they attended middle school and high school. It would be useful to have a community survey that was specific to our community to get a more accurate perception. The survey should address items such as: the attitudes toward alcohol use and abuse concerning minors, perceived drinking habits of minors, the extents of personal drinking problems, and the extent of criminal activity as a result of minors consuming alcohol. Correct data on the prevalence of underage drinking and resulting criminal activity could also be distributed to the community so they are made aware of any misconceptions they may have over the prevalence of underage drinking.

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